A
728.5
.D64
1989

3839-01-02 July 1989

Does Cost of Practice Explain Geographic Differences in Medicare Fees?

Gregory C. Pope
W. Pete Welch
Stephen Zuckerman
Mary G. Henderson

Gregory C. Pope, M.S., is a Senior Economist, Center for Health Economics Research, 75 Second Avenue, Suite 100, Needham, MA 02194; W. Pete Welch, Ph.D., and Stephen Zuckerman, Ph.D., are Senior Research Associates, The Urban Institute, 2100 M Street, N.W., Washington, D.C. 20037; Mary G. Henderson, Ph.D., is a Senior Research Associate, Bigel Institute, Heller School, Brandeis University, 415 South Street, Waltham, MA 02254.

Support for this research was provided by the Health Care Financing Administration to the Center for Health Economics Research through Grant No. 17-C-89758/1-03, to The Urban Institute through Grant No. 18-C-98326/1-01 to the Brandeis University Health Policy Research Consortium, and to Brandeis University through Grant No. 18-C98526/1-04 to the Brandeis University Health Policy Research Consortium. An earlier version of this paper was presented at the American Public Health Association annual meetings in Boston, November, 1988. The authors would like to thank Paul Ginsberg for helpful comments.

The opinions expressed are the authors' and do not necessarily represent the views of the Health Care Financing Administration.

ABSTRACT

Accelerating growth in outlays for Medicare Supplemental Medical Insurance (Part B) has led Congress to consider a variety of physician payment reforms. Proposed changes in physician payment aim to reduce inappropriate variation in Medicare fees while preserving fee variation that reflects cost differences. This paper explores the extent to which geographic differences in fees can be explained by practice costs.

We investigate the relationship between fees and costs using data on 1987 Medicare charges and an index that measures geographic differences in the costs of practice. Half of variation in average Medicare charges among areas is accounted for by cost of practice. Moreover, higher average fees in urban areas than in rural areas are explained by the higher cost of practicing in urban areas. However, the percentage of geographic variation in the fees of specific services due to costs is as low as five percent. Linking geographic variation in fees to the cost of practice would reduce fee differences among areas from as much as four-fold to less than two-fold. This would result in large changes in fees in many areas.

DOES COST OF PRACTICE EXPLAIN GEOGRAPHIC DIFFERENCES IN MEDICARE FEES?

Accelerating growth in outlays for Medicare's Supplemental Medical Insurance (Part B)--the major source of payment for the elderly's physician care--is leading Congress to consider physician payment reform. Policies that would moderate Part B spending by reducing inappropriate variation in Medicare fees are under serious consideration. Foremost among these policies are a national fee schedule based on relative resource costs or a further limitation of fees for "overpriced" procedures.[1,2] Through the Omnibus Reconciliation Act of 1987, Congress lowered the charge ceiling for 12 procedures identified as overpriced by the Physician Payment Review Commission.[3]

Medicare's "customary, prevailing, and reasonable" method of reimbursing physicians has led to enormous variation in the payment different physicians receive for the same service.[4] Fees paid by Medicare for a particular service can vary by geographic area, the specialty of the physician, and place of service. Several studies have documented fee differences of three to four-fold for physicians practicing within a single state.[5]

The general consensus is that the current level of fee variation is excessive. Since some of this variation is due to justifiable differences in practice costs, Congress has stated that Medicare should recognize practice cost differences when modifying its payment rates.[6] Failure to compensate physicians for differences in costs over which they have no control would be inequitable to physicians and could create significant access problems for Medicare beneficiaries. Physicians might be unwilling to serve Medicare patients in higher cost areas if Medicare fees did not reflect the higher cost of practice. Ultimately physicians might choose to move their practices to lower cost areas, distorting the geographic distribution of physicians. In addition, beneficiaries in high cost areas could be faced with substantial out-of-pocket expense if physicians charged more than Medicare's fee to recoup their higher costs.

Public discussion has focused on a resource-based relative value scale as the centerpiece of physician payment reform. However, aligning geographic variation in fees with the cost of practice could redistribute payments among physicians by the same magnitude as implementing a relative value scale. In addition, if geographic fee differences are largely due to the cost of practice, a fee schedule that does not adjust for these costs would result in payment shifts that are massive and unjustifiable. Our analysis begins to determine the size of the redistribution that would occur if a geographic cost-of-practice index is incorporated into physician payment reform.

Little is known about how much of the geographic differences in fees is explained by the cost of practice, primarily because until recently there existed no systematic way to measure relative practice costs across areas. Acknowledging this void, Congress mandated that a geographic index of physician practice costs be developed. Three of the authors have completed several versions of such an index for the Health Care Financing Administration.[7] Although the index used in this article is only one of several options available to the Health Care Financing Administration, it allows us to explore the relationship between fees and the cost of practice. In this article, we apply this index to 1987 data on Medicare prevailing charges to determine the extent to which fee variation reflects cost of practice differences.[8]

METHODS

Charge Data and Index

Medicare constrains a physician's payment for performing a service by the "prevailing charge" for that service in the physician's area. A prevailing charge is determined in each of 240 geographic areas, called "charge localities." Charge localities vary from one statewide area (e.g., Arkansas, Colorado) to as many as 32 areas in one state (Texas). In 1987, for example, Medicare's payment to an Colorado internist for performing a sigmoidoscopy was limited by the Colorado prevailing charge of $85 for this service. Although some physicians receive less than the prevailing charge, differences in the prevailing charges among areas are a good indication of geographic variation in Medicare fees. A second reason we examine prevailing charges is that Medicare policies to limit geographic differences in fees are likely to be implemented through adjustments of the area prevailing charges.

The Health Care Financing Administration has collected information on 1987 prevailing charges for all fifty states, Washington, D.C., and Puerto Rico. Data were obtained for 67 services, including many of the most costly to Medicare. Surgical, diagnostic, office and hospital visit, x-ray, and consultation services are represented. These data provide the most recent and comprehensive information on the prevailing charges of these services.

We use these data to examine geographic variation in the prevailing charges of individual services. In addition, we measure average charges in an area with a prevailing charge index for each charge locality. The index is constructed by pricing the same physician services in each area. Then each area's charges for these services are compared to the national average charges for the same services. The services in our database are weighted to represent all Medicare services. The charge index measures average fees in an area relative to the national average. For instance, on average across many services, physician fees are 18 percent higher than the national average in San Francisco. We use the charge index to determine variation in average fees among the 240 charge localities, and to compare average fees for urban and rural areas and regions of the nation.

Cost-of-Practice Index

The cost-of-practice index measures the relative cost of providing a physician service in different areas, including the cost of the physician's own time. Cost of practice should not be confused with physicians' annual practice expenses that reflect both the cost of providing individual services (cost of practice) and the quantity of services the physician provides. For instance, the fact that 1986 average annual expenses were one percent above the national average in rural areas does not mean that rural physicians' cost of practice was higher than average. Rural physicians provided 19 percent more visits than physicians nationally, suggesting that their cost per unit of service was below average.[9]

The construction of the cost-of-practice index involves the following steps. First, the cost categories included in the index are determined. There are two major types of costs in providing physicians' services: the cost of the physician's time and practice overhead expenses. Physicians' time is included as a cost because the cost-of-living varies from place to place. Physicians in higher cost-of-living areas have to earn a higher net income to achieve the same standard of living as physicians in lower cost-of-living areas. Overhead expenses are subdivided into six categories: nonphysician employee wages, office rent, malpractice insurance, medical supplies, medical equipment, and other (a residual category).

The second step is determining how heavily each type of cost should be weighted in the index. The index weights are derived from data on the average net incomes and overhead expenses of self-employed physicians reported by the American Medical Association.[10] The weights are the proportion of gross practice revenue spent on each type of cost. The share of revenue accounted for by net income is used as the weight for physician time because net income is compensation for the cost of the physician's time. Each component's weight in the index is: physician time, 54.2 percent; employee wages, 15.7 percent; office rent, 11.1 percent; malpractice insurance, 5.6 percent; medical supplies, 5.0 percent; medical equipment, 2.4 percent; and other, 6.0 percent.

The third step is measuring geographic differences in the cost of physician time and the overhead expense items. Determining the relative cost of physician time is the most crucial task, since it comprises over half of the index. It is also the most difficult step since there is no observable market cost for physician time. We use an indirect approach to measure the cost of physicians' time.

The physician's cost of residing in an area depends on both the area's cost of living and its amenities (or lack of amenities). Amenities include professional factors such as access to quality colleagues, and personal factors such as availability of cultural and recreational opportunities, low crime rate, and mild climate. Lack of amenities can be thought of as a cost incurred by physicians practicing in less desirable areas.

Since earning levels capture cost of living and amenity differences among areas, we use earnings to measure geographic differences in the cost of physicians' time.[11-16] All else equal, workers locate in high cost-of-living areas only if they earn more in these areas. Thus, higher costs for housing, food, and other purchased goods are reflected in higher earnings. On the other hand, workers accept lower earnings to locate in areas with desirable amenities. An area's earnings can therefore be used to measure both its cost of living and its amenities.

However, physician earnings in different areas is not an appropriate measure of physician time costs. Geographic earnings patterns may be distorted by payment policies of third-party payors and other factors which cause the physician services market to be less than perfectly competitive. Moreover, using physician earnings to evaluate geographic variations in physician fees is circular, because earnings are themselves determined by current fee patterns.

Median hourly earnings of professionals (as defined by the Bureau of the Census) is an independent measure of variations in the cost of physician time. Professionals (excluding physicians) is used as the reference group because it includes workers who buy similar goods and have similar preferences to physicians. This reference group includes highly-educated workers such as engineers, lawyers, scientists, teachers, and dentists. Geographic patterns in professional earnings should be similar to those that would exist for physicians in the absence of health insurance and other factors that make the physician services market imperfectly competitive.

To further improve comparability to physicians, we include only those professionals with graduate (i.e., post-college) education. In addition, we adjust median earnings for the occupation mix of professional workers (e.g., teachers versus engineers) in different areas. However, we could still be overstating professional earnings in some areas if the types of workers within occupation are different across areas. For example, high-earning corporate lawyers are likely to be present in greater proportions in New York City than in smaller metropolitan or rural areas. To minimize this potential bias, we use median earnings, which is less sensitive to extreme values, rather than mean earnings. It is plausible that the median-earning professional within each occupation is fairly similar among areas. Professional earnings by area were obtained from the 20-percent of the population sample of the 1980 Census.

Geographic variation in the costs of the overhead items are also determined. The wages of practice employees are measured by the hourly earnings in each area of administrative support and clerical workers, registered nurses, licensed practical nurses, and medical technicians from the 1980 Census. Since there are no adequate national data on office rental costs, the "fair market" apartment rents developed for each area by the Department of Housing and Urban Development are used instead. Relative apartment rents should be a good indicator of relative office space costs. Area by area variation in the cost of malpractice insurance for a policy offering a uniform level of coverage is measured using data from an annual Health Care Financing Administration survey of the major malpractice insurers. Unfortunately, no cost data are available for several overhead items (medical supplies and equipment, and "other" expenses), accounting for about 13 percent of the index. Since these items are thought to exhibit minimal geographic variation in cost, we treat them as if they had no geographic variation.

The cost of physician time and the practice overhead items are combined using the cost weights to form an index value for each area. For example, the cost of practice is 23 percent higher than the national average in San Francisco. This is because, in San Francisco, professionals earn 15 percent more than the national average, employee wages are 26 percent higher than average, rents are 76 percent higher, and malpractice coverage costs 37 percent more. We assume that supply, equipment, and other costs are the same as elsewhere in the nation. Combining these amounts with the index weights yields 23 percent: .542 x 15% + .157 x 26% + .111 x 76% + .056 x 37% + .134 x 0% = 23%.

RESULTS

Variation in Prevailing Charges

The prevailing charge--the maximum amount Medicare pays physicians for a service--can be quite different depending on the area in which the physician practices. In the highest-priced area, this charge is typically several times that of the lowest-priced area. For instance, the 1987 prevailing charge for an internist's comprehensive office visit with a new patient was as low as $30 in Odessa, Texas, while it was as high as $130 in San Diego, more than a four-fold difference. The lowest prevailing charge for a total hip replacement by an orthopedic surgeon was $1663 in Milwaukee, but the highest was over two and one-half times as much, $4436, in Manhattan.

The range in charges between the highest-priced and lowest-priced areas differs considerably from service to service. Even excluding the highest and lowest-priced five percent of areas, office and hospital visit fees vary by nearly four-fold to about two-fold (Table 1). Surgical fees have a smaller range, on average, of less than two-fold to about two and one-half fold. The range between these extremes, however, overstates the differences among charges in most areas. For each service, fees differ considerably less among the middle half of areas than they do between the highest- and lowest-priced areas. For example, excluding the highest and lowest five percent of charge localities, the prevailing charge for an internist's comprehensive office visit with a new patient was as low as $41 and as high as $111 (Table 1). Similarly, charges for a total hip replacement varied from $1883 to $3549. However, in half of all areas, the charge for the internist's office visit was between $60 and $89 and the charge for a total hip replacement was between $2218 and $3145.

Average fees vary less among areas than fees of particular services because higher-priced services in an area are often offset by other, lower-priced services. Average prevailing charges are 26 percent or more below the national average in 5 percent of areas; in another 5 percent, average charges are 34 percent or more above average (Table 1). However, average charges in most areas fall within a much narrower range. Half of all areas have average charges between 15 percent below and 3 percent above the national average.

Prevailing Charges and the Cost of Practice

To determine the relationship between prevailing charges and the cost of practice, we calculated variation in prevailing charges both before and after deflating by the cost-of-practice index. Variation is measured by the coefficient of variation weighted by population. The percentage reduction in variation resulting from deflation is the share of charge variation explained by cost of practice differences.[17]

For individual services, most charge variation is not explained by costs. For the wide range of services presented in Table 2, no more than 37 percent of charge variation can be attributed to costs. Services differ substantially in how much charge variation is eliminated by adjustment for costs. For some services--a comprehensive office visit, an intermediate hospital visit, and a sigmoidoscopy--the percentage of explained variation is as low as five percent. For these services, deflating by costs only slightly reduces the charge differences between the highest and lowest-priced areas shown in Table 1. Conversely, over one-third of the variation in the charges of transurethral resection of prostate and gallbladder removal can be attributed to costs. Correspondingly, deflating by costs reduces the charge difference between the highest and lowest-priced areas (the 95th-5th percentile difference in Table 1) from $887 to $571 (a 36% reduction) for transurethral resection of prostate, and from $662 to $391 (a 41% reduction) for gallbladder removal.

We have not discerned any pattern as to which charges are more closely related to costs. Different services performed by the same specialty often have very different proportions of charge variation explained by costs. Similarly, within the same type of service (e.g., medical or surgical), the charges of some services are more closely related to costs than are others.

Costs explain a higher proportion of variation in average charges than in charges for specific services. About half of the differences in average charges are eliminated by adjustment for costs. When costs are considered, average charges in the highest-priced five percent of areas are only 16 percent or more above the national average (compared to 34 percent unadjusted) and charges in the lowest-priced five percent of areas are only 17 percent or more below average (compared to 26 percent unadjusted). Slightly less of the variation in average medical and surgical services charges is related to costs (38.2% and 38.0% respectively--not shown in the table), and about one-third of the variation (30.1%) in consultation charges can be explained by cost differences.

Urban-Rural and Regional Fee Differences

Much higher physician-to-population ratios in urban areas has led to concern that rural areas are underserved by physicians. It has been hypothesized that low fees in rural areas discourage physicians from locating there. Indeed, on average, Medicare prevailing charges are 19 percent higher in urban counties than in rural counties.[18] However, it costs 20 percent more to practice in urban counties than in rural counties. Consequently, fees are no higher relative to costs in urban areas than in rural areas (Table 3).[19] If Medicare beneficiaries in rural areas are underserved, it is not due to Medicare fees which are lower relative to the cost of practice in rural areas than in urban areas.

Among urban areas, average prevailing charges range from 12 percent above the national average in metropolitan areas of over 1 million population to 7 percent below average in metropolitan areas of under 500,000 population

(Table 3). Virtually all of the higher fees in large urban areas are accounted for by the higher costs of practicing there. On average, therefore, large cities are not "overpriced" relative to costs. However, small urban areas seem to be slightly "underpriced" relative to costs.

Average Medicare fees vary substantially among different regions of the country, from 8 percent below the national average in the Midwest to 12 percent above average in the West (Table 3). Once again, most of this variation is accounted for by differences in the cost of practice. Adjusted for cost of practice, the range is only from 6 percent below average in the Midwest to 3 percent above average in the West.

Linking Geographic Fee Variation to Cost of Practice

Although average urban-rural and regional fees are strongly related to the cost of practice, most of the variation in the fees of individual services is not explained by costs. Thus, linking fees to the cost of practice would significantly change fees for individual services in many areas. Table 4 presents an example of how fees would change in three large cities, three smaller cities, and three rural areas if physicians were paid the national average fee adjusted by their local cost of practice. The 1987 national average prevailing charge was $77 for an internist's comprehensive office visit with a new patient. Since the cost of practice in Chicago is 19 percent higher than the national average, if Chicago internists were paid the national average adjusted for their cost of practice, they would receive $92 (= $77 multiplied by 1.19) for the visit. This is 23 percent more than the current Chicago prevailing charge of $75. Conversely, Atlanta internists would see their prevailing charge drop by 34 percent (from $111 to $73) for this visit because the cost of practice is 6 percent below the national average in Atlanta. The fee would change little in some other areas, including Des Moines, Iowa and rural Indiana.

Linking fees to the cost of practice would reduce current fee differences among these areas. The prevailing charge for a comprehensive office visit differed by as much as $43 in 1987 ($111 in San Francisco and

Atlanta versus $68 in rural Indiana), but would differ by a maximum of only $31 ($95 in San Francisco versus $64 in rural Georgia) if fees varied in proportion to costs (Table 4). Similarly, the greatest difference among these areas in the charge for a sigmoidoscopy would be reduced from $79 to $45, and for a gallbladder removal from $666 to $378.

This compression in geographic charge variation is representative of what would occur across all areas and services if fees were linked to the cost of practice. As measured by our index, the cost of practice varies by a factor of less than two across areas. Hence, if cost of practice were used to establish appropriate geographic fee differences, fees in the highest-priced area would be less than twice as high as in the lowest-priced area. This compares to current fee differences among areas for some services of as much as four-fold (see Table 1).

However, if fees were linked to the cost of practice, fees would still be much higher in some areas than others because practice costs are considerably higher in some areas than others. For example, if general surgeons were paid the national average charge for a gallbladder removal ($943) adjusted for local costs, they would receive $780 in rural Georgia compared to $1158 in San Francisco (Table 4). This difference results from the 48 percent higher cost of practicing in San Francisco than in rural Georgia. Taking into account costs, the adjusted national average pays the rural Georgia surgeon and the San Francisco surgeon at the same rate.

DISCUSSION

In the debate over reforming Medicare's physician payment methods, geographic differences in fees have received little attention compared to a resource-based fee schedule for services. Yet, where a physician practices has an important influence on what he or she is paid by Medicare. We have documented differences of as much as four-fold among areas in the Medicare prevailing charge for the same service. Any reform of physician payment methods must address these large geographic differences. An appropriate geographic pattern of fees could be established through a national fee schedule that is adjusted from area to area by a geographic multiplier based on costs. Alternatively, Medicare's area prevailing charges could be modified to narrow fee differences without implementing a national fee schedule.

The cost-of-practice index developed by three of the authors for the Health Care Financing Administration is one means of rationally adjusting fees from area to area. To be sure, this index has some limitations. We are forced to use an indirect measure of the cost of physician time. Because of lack of data, we have to employ apartment rents to measure office rents and to assume that medical supplies and equipment cost the same everywhere. Our index does not measure fundamental differences in practice styles among areas. Nevertheless, our index is the best available measure of cost-of-practice differences among areas. (The Health Care Financing Administration, Physician Payment Review Commission, and Congressional Budget Office have employed our index in policy analyses of physician payments.)[20-22]

Using this index, we find that about half of the current geographic variation in average prevailing charges is accounted for by cost of practice. Average charge differences among many areas are strongly related to costs. Nonetheless, the one-half unexplained variation implies that use of this index to set fees would redistribute average payments significantly from some areas to others. Which areas would gain and which would lose? Higher charges in urban areas than in rural areas and in large cities than small cities are fully explained by the higher costs of practicing in these areas. Thus, this index would not redistribute payments, on average, from urban areas to rural areas, or from large cities to small cities. Similarly, most regional differences in charges are accounted for by different costs of practice. Even so, this index would raise average payments slightly in the Midwest and lower them slightly in the Northeast and West. For the most part, redistributions of average payments would take place within urban-rural and regional areas, not between them.

Somewhat paradoxically, geographic differences in the charges of many individual services are not as closely related to costs as are average charges. If fees for every service were determined by the cost of practice in an area, substantial changes in the fees of individual services would occur in many areas, even though the average level of payments to an area would be changed less drastically. Overall, geographic fee variation would be significantly reduced, from four-fold for some services to less than two-fold. However, since the cost of practice is more than 50 percent higher in some areas than others, fees would remain substantially higher in some areas than others.

Even though significant redistributions would occur if this cost index were used to establish geographic payment differences, much larger redistributions of payments among areas would occur if a national fee schedule were implemented without any geographic adjustments (so that physicians would be paid the same amount regardless of their costs).[23] Similarly, larger redistributions would result if adjustments were made only for area differences in practice overhead costs, and not in the cost of living (i.e., the cost of physician time), as has been recommended by the Physician Payment Review Commission.[24] To our minds, the massive redistributions from urban to rural areas, or among regions and particular localities, that would result from adjusting only for overhead costs are not justified. Not paying more to offset the higher cost of living would be unfair to physicians practicing in high cost-of-living cities such as New York and Los Angeles. In addition, it could create access problems for beneficiaries, especially those unable to afford increases in physician charges above what Medicare pays.

Why area variation in some fees is almost unrelated to practice cost differences is an important subject for future research. It could be that there are idiosyncratic cost variations for particular services or areas that are not measured by our cost index. Or Medicare fees may vary for reasons other than costs. Fees might be higher where physicians are scarce, where private insurance coverage is more generous, or where physicians are better-trained, are providing higher quality services, or are treating sicker patients. Variation across areas in the definition of services (e.g., whether pre- and post-operative visits are included in the surgical fee) may also contribute to unexplained fee differences. On the other hand, perhaps the unexplained variations are in fact essentially random and are not justifiable. Since changing these fees could affect physician equity and beneficiary access to care, caution should be exercised in modifying them. Analysis of factors beyond practice costs is the necessary next step in research on physician payment reform.

NOTES

1. Hsiao, W., P. Braun, D. Dunn, *et al.*, Resource-based relative values: an overview. *JAMA*, 1988; 260:2347-53.

2. Mitchell, J., W. Stason, K. Calore, *et al.*, Are some surgical procedures overpaid? *Health Affairs*, 1987; 6:121-31.

3. Omnibus Budget Reconciliation Act of 1987 (P.L. 100-203).

4. Burney, I., G. Schieber, and M. Blaxall, Geographic variations in physician fees. *JAMA*, 1978; 240:1368-71.

5. Payment for physician services, strategies for medicare. Washington, D.C.: Office of Technology Assessment, 1986 (OTA-H-294).

6. Omnibus Budget Reconciliation Act of 1986 (P.L. 99-509).

7. W. Pete Welch, Stephen Zuckerman, and Gregory C. Pope, The geographic medicare economic index: alternative approaches. Baltimore, MD: Final Report to the Health Care Financing Administration, June 1989. See also S. Zuckerman, W. Welch, and G. Pope, The development of an interim geographic medicare economic index. Springfield, VA: National Technical Information Service, 1988. (NTIS publication No. PB88220678.)

8. For an alternative analysis of the relationship between fees and costs which uses the preliminary values of our cost-of-practice index, see Physician Payment Review Commission, *Annual Report to Congress*, 1988.

9. Socioeconomic characteristics of medical practice. Chicago, IL: American Medical Association, 1987.

NOTES (continued)

10. Socioeconomic characteristics of medical practice. Chicago, IL: American Medical Association, 1988.

11. Roback, J., Wages, rents, and amenities: differences among workers and regions. Economic Inquiry, 1988; 26:23-41.

12. Roback, J., Wages, rents, and the quality of life. Journal of Political Economy, 1982; 90:1257-78.

13. Carlino, G., Do regional wages differ? Federal Reserve Bank of Philadelphia Business Review, July/August 1986; pp. 17-25.

14. Gerking, S., and W. Weirick, Compensating differences in interregional wage differentials. The Review of Economics and Statistics, 1983; 65:483-87.

15. Smith, V., The role of site and job characteristics in hedonic wage models. Journal of Urban Economics, 1983; 13:296-321.

16. Getz, M., and Y. Huang, Consumer revealed preference for environmental goods. The Review of Economics and Statistics, 1978; 60:449-58.

17. The variation of prevailing charges can be summarized in several different ways, including the variance and the coefficient of variation (CV), which is the standard deviation divided by the mean. We use the CV to summarize the percentage of variation in charges explained by costs because the standard deviation measures variation in the same units as the original variable (dollars of charges). The percentage of the variance in charges

NOTES (continued)

17. (continued) explained by costs, or R-squared, is an alternative measure. We note for comparison that the percent of variance in charges expained by costs is higher than the percent of the CV of charges explained by costs, e.g. 69 percent versus 44 percent for average charges.

18. Urban counties are counties in Metropolitan Statistical Areas as defined by the Census Bureau. All other counties are rural. Because prevailing charges are only available by charge localities, we created an algorithm that maps charges from localities to their component counties or county parts.

19. In rural areas, surgical fees are three percent higher relative to costs than in urban areas, consultation fees are one percent higher, but medical (mostly office and hospital visit) fees are one percent lower.

20. Department of Health and Human Services, Health Care Financing Administration, Analysis of the Impact of a Resource-Based Relative Value Scale for Physician Payment, Baltimore, MD, July 1989.

21. Annual report to congress. Washington D.C.: Physician Payment Review Commission, 1988.

22. The Congress of the United States, Congressional Budget Office. Reducing the deficit: spending and revenue options. Washington, D.C.: U.S. Government Printing Office, 1989.

23. Center for Health Policy Research, The impact of medicare payment schedule alternatives on physicians, American Medical Association, Chicago, IL, November, 1988.

NOTES (continued)

24. Statement of the Physician Payment Review Commission Before the Committee on Finance, United States Senate, March 17, 1989.

ABLE 1

EOGRAPHIC DISTRIBUTION OF MEDICARE PREVAILING CHARGES FOR SELECTED SERVICES AND SPECIALTIES, 987*

		PERCENTILES**				
PT-4 Code	Service	5	25	50	75	95
90015	Intermediate Office Visit, New Patient[†]	$21	33	44	55	78
90020	Comprehensive Office Visit, New Patient[†]	$41	60	78	89	111
90040	Brief Office Visit, Established Patient[†]	$13	16	18	22	27
90050	Limited Office Visit, Established Patient[†]	$13	18	22	24	33
90215	Intermediate Initial Hospital Care[†]	$43	56	72	80	101
90620	Initial Consultation, Comprehensive[†]	$65	78	95	111	133
93010	EKG Interpretation and Report[†]	$8	11	16	20	25
27130	Total Hip Replacement[Ω]	$1883	2218	2660	3145	3549
27244	Femur Fracture, Reduction and Fixation[Ω]	$887	1064	1109	1419	2147
33512	Coronary Artery Bypass[††]	$2716	3603	4071	4940	5941
43235	Upper GI Endoscopy[†]	$225	285	321	363	452
45330	Sigmoidoscopy[†]	$51	86	106	125	169
47600	Gallbladder Removal[ϕ]	$689	776	887	992	1351
52601	Transurethral Resection of Prostate[Π]	$887	998	1109	1323	1774
64721	Carpal Tunnel Release[Ω]	$333	444	482	650	750
71010	Chest X-ray, One View[†]	$22	26	30	33	39
----	Average Charges[‖]	-26%	-15%	-7%	+3%	+34%

---

*Data are from a 1987 Health Care Financing Administration survey of carriers.

**The prevailing charge in 5 percent of areas (charge localities) is less than the 5th percentile, in 50 percent of areas is less than the 50th percentile, and in 95 percent of areas is less than the 95th percentile.

[†] Specialty is internist.

[Ω] Specialty is orthopedic surgeon.

[††] Specialty is thoracic surgeon.

[ϕ] Specialty is general surgeon.

[Π] Specialty is urologist.

[‖] Based on the prevailing charge index (see text).

TABLE 2

PERCENTAGE OF GEOGRAPHIC VARIATION IN MEDICARE PREVAILING CHARGES EXPLAINED BY COST OF PRACTICE*

CPT-4 Code	Service	Percent of Variation Due To Cost of Practice
90015	Intermediate Office Visit, New Patient[†]	14.1%
90020	Comprehensive Office Visit, New Patient[†]	4.6
90040	Brief Office Visit, Established Patient[†]	29.7
90050	Limited Office Visit, Established Patient[†]	28.5
90215	Intermediate Initial Hospital Care[†]	7.6
90620	Initial Consultation, Comprehensive[†]	25.8
93010	EKG Interpretation and Report[†]	9.6
27130	Total Hip Replacement[Ω]	11.2
27244	Femur Fracture, Reduction and Fixation[Ω]	33.0
33512	Coronary Artery Bypass[††]	19.9
43235	Upper GI Endoscopy[†]	20.0
45330	Sigmoidoscopy[†]	6.0
47600	Gallbladder Removal[Φ]	37.3
52601	Transurethral Resection of Prostate[Π]	36.3
64721	Carpal Tunnel Release[Ω]	17.0
71010	Chest X-ray, One View[†]	11.9
---	Average Charges[‖]	44.4

*Percentage decrease in coefficient of variation of prevailing charge when deflated by the cost-of-practice index. The coefficient of variation is population weighted. Data are from a 1987 Health Care Financing Administration survey of carriers and a cost-of-practice index developed by the authors.

[†] Specialty is internist.

[Ω] Specialty is orthopedic surgeon.

[††] Specialty is thoracic surgeon.

[Φ] Specialty is general surgeon.

[Π] Specialty is urologist.

[‖] Based on the prevailing charge index (see text).

TABLE 3

MEAN URBAN, RURAL, AND REGIONAL MEDICARE PREVAILING CHARGES RELATIVE TO THE NATIONAL AVERAGE, ACTUAL AND ADJUSTED FOR COST OF PRACTICE*

	Actual	Adjusted for Cost of Practice
Urban**	+4%	0%
1+ million	+12%	+1%
.5-1 million	-2%	0%
< .5 million	-7%	-2%
Rural	-13%	+1%
Region		
Northeast	+10%	+2%
South	-7%	+1%
Midwest	-8%	-6%
West	+12%	+3%

*Based on population-weighted means of the prevailing charge index (actual) and the prevailing charge index deflated by the cost-of-practice index (adjusted). Charge data are from a 1987 Health Care Financing Administration survey of carriers, while the cost-of-practice index was developed by the authors (see text).

**Subcategories refer to metropolitan area population.

TABLE 4

COMPARISON OF THE 1987 MEDICARE PREVAILING CHARGE TO THE NATIONAL AVERAGE CHARGE ADJUSTED FOR LOCAL COST-OF-PRACTICE, FOR SELECTED SERVICES AND AREAS*

	COMPREHENSIVE OFFICE VISIT, NEW PATIENT†			SIGMOIDOSCOPY†			GALLBLADDER REMOVAL‡		
Area	Actual Charge	Adjusted National Charge	Percent Difference	Actual Charge	Adjusted National Charge	Percent Difference	Actual Charge	Adjusted National Charge	Percent Difference
Large Cities									
Chicago, IL	$75	$92	23%	$130	$134	3%	$1,109	$1,119	1%
San Francisco, CA	111	95	-14	100	138	38	1,331	1,158	-13
Atlanta, GA	111	73	-34	110	106	-4	887	890	0
Smaller Cities									
Des Moines, IA	78	74	-5	109	109	0	776	910	17
Montgomery, AL	78	71	9	51	103	102	887	864	-3
Tuscon, AZ	107	76	-29	100	111	11	931	928	0
Rural Areas									
Rural Indiana	68	69	1	123	100	-19	721	838	16
Rural Georgia	80	64	-20	80	93	16	665	780	17
Rural Oregon	78	73	-6	125	107	-14	836	897	7

---

*Data are from a 1987 Health Care Financing Administration survey of carriers and a cost-of-practice index developed by the authors.

†Specialty is internist.

‡Specialty is general surgeon.

CMS LIBRARY
3 8095 00005901 0

c.1